REMARKS

Claims 1-27 are pending in the present application. No additional claims fee is believed to be due.

Claim 2 is canceled without prejudice. New Claim 38 has been added to further define a cationic cellulose polymer.

Claims 1 and 23 have been amended to incorporate the matter of Claim 2, in order to more specifically characterize the present invention. Specifically, Claims 1 and 23 have been amended wherein the cationic polymer is in a complex coacervate phase in the shampoo composition or forms a complex coacervate upon dilution of the shampoo composition with water. Support for the amendment is found in the claims as originally filed as well as at page 16, lines 26-28 of the specification.

Claims 10, 11, 15, 16, 22 and 23 have been amended to provide further clarity with regard to the term "water incoluble". Claims 13, 14, and 27 have been amended to provide for proper antecedent basis in dependent claims.

With regard to Claim 7 and the inclusion of the terms Polyquaternium-10 and Polymer LR 30M, Applicants would like to kindly point out that the term Polyquaternium-10 is the chemical name for a class of cationic polymer compounds and is not regarded as a trademark or tradename. Polyquaternium-10 is a polymeric quaternary ammonium salt of hydroxyethyl ammonium salt of hydroxyethyl cellulose reacted with a trimethyl ammonium substituted epoxide and has the CAS numbers: 53568-66-4; 55353-19-0; 54351-50-7; 81859-24-7; 68610-92-4 and 81859-24-7. Therefore, a trademark or tradename is not intended to be used to identify the cationic polymer. The trademark Polymer LR-30M is only being used to identify a source of goods, in this case, a specific source of a Polyquaternium-10 compound.

Upon the request of the Examiner, Applicants have included an attachment which is a product description provided from Amerchol for the LR and JR series of polymers which Amerchol manufactures.

Claims 28-37 have been withdrawn as a result of an earlier restriction requirement.

It is believed these changes do not involve any introduction of new matter. Consequently, entry of these changes is believed to be in order and is respectfully requested.

INVENTION SYNOPSIS

The present invention is directed to a hair conditioning shampoo composition comprising from about 5% to about 50%, by weight, of a surfactant component selected from the group consisting of anionic surfactants, amphoteric surfactants, or a combination of anionic and amphoteric or zwitterionic surfactants where the amphoteric surfactants are anionic or zwitterionic at the pH of the composition; from about 0.01% to about 5%, by weight, of a water soluble, organic, cationic polymer hair conditioning agent having a cationic charge density of from about 0.1 meq/gram to about 1.2 meq/gram and wherein the water soluble, organic, cationic polymer hair conditioning agent has a molecular weight greater than 600,000; and an aqueous carrier; wherein the cationic polymer is in a complex coacervate phase in the shampoo composition or forms a complex coacervate upon dilution of the shampoo composition with water.

35 U.S.C. § 102(e)

Claims 1-12, 14-16 and 18-26 are rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent 5,977,036 (Guskey). Applicants respectfully traverse this rejection. Guskey discloses hair styling shampoo compositions which comprise from about 5% to about 50% by weight of a surfactant selected from the group consisting of anionic surfactants, zwitterionic or amphoteric surfactants having an attached group that is anionic at the pH of the composition, from about 0.025% to about 3% by weight of an organic cationic polymer having a cationic charge density of from about 0.2 meq/gm to about 7 meq/gm and a molecular weight of from about 5000 to about 10 million, from about 0.1% to about 10% by weight of a water-insoluble hair styling polymer, from about 0.1% to about 10% by weight of a water-insoluble volatile solvent, and from about 0.005% to about 2.0% by weight of a crystalline hydroxyl-containing stabilizing agent and from about 26.5% to about 94.9% by weight of water.

As now amended, the present invention is directed towards a hair conditioning shampoo composition comprising from about 5% to about 50%, by weight, of a surfactant component selected from the group consisting of anionic surfactants, amphoteric surfactants, or a combination of anionic and amphoteric or zwitterionic surfactants where the amphoteric surfactants are anionic or zwitterionic at the pH of the composition; from about 0.01% to about 5%, by weight, of a water soluble, organic, cationic polymer hair conditioning agent having a cationic charge density of from about 0.1 meq/gram to about 1.2 meq/gram and wherein the water soluble, organic, cationic polymer hair conditioning agent has a molecular weight greater than 600,000; and an aqueous carrier; wherein the cationic polymer is in a complex coacervate phase in the shampoo composition or forms a complex coacervate upon dilution of the shampoo composition with water. By this combination, the lower charge density cationic polymer will yield higher levels of coacervate and therefore higher wet conditioning benefits to the hair. 'Gus key neither discloses nor makes obvious the present invention's requirement that the cationic

polymer is in a complex coacervate phase in the shampoo composition or forms a complex coacervate upon dilution of the shampoo composition with water, in combination with a lower charge density cationic polymer.

The present invention has surprisingly found that the wet conditioning benefits are a result of the formation of a complex coacervate either in the full formula or during the wash or rinse step during shampoo use. This wet coacervate deposits on hair and delivers the wet conditioning benefit. Although the coacervate formation is caused by charge attraction of the anionic micelles and cationic polymers, it has surprisingly been found that the amount of this coacervate actually increases as the charge density of the cationic polymer decreases. Thus, the lower charge density cationic polymer will yield higher levels of coacervate and therefore higher wet conditioning.

The present invention has also surprisingly discovered that the cationic polymers that form larger amounts of coacervate also form coacervate that contain lower levels of non-volatiles. Such coacervates with less non-volatiles provide the benefit of leaving the hair with a cleaner feel after drying and result in less weigh down to the hair. Therefore, not only do the low charge density cationic polymers provide the benefit of improved wet conditioning, but they provide this benefit without leaving as much residue on the hair as would be expected if higher levels of less efficient polymers were used.

Consequently, the present invention has now found that improved overall conditioning can be found by combining anionic surfactant in a shampoo with a soluble cationic organic polymer hair conditioning agent of low charge density and high molecular weight. These compositions can provide improved conditioning while reducing the level of undesirable side effects that can result from excessive deposition of conditioning agent in prior known conditioning systems. As discussed previously, a conditioning agent system with high charge density cationic polymers can result in build up on the hair over repeated usages and to loss of fullness of the hair. Too much cationic conditioning agent results in a coated, dirty feel of the hair. Now it has been found that the components of the present invention can provide improved overall conditioning while minimizing the adverse effects of conditioning agent build-up that otherwise can be incurred upon increasing the levels of individual components in prior known conditioning systems.

It has been previously known that higher charge density polymers are superior as deposition aids for small particle dispersed agents. However the present invention has surprisingly found that low charge density cationic polymers, although they are less efficient as deposition aids, are in fact better than the higher charge density cationic polymers for providing wet conditioning benefits.

Therefore, Guskey does not disclose the present invention. Guskey is silent with regard to coacervate formation and does not provide any disclosure with regard to a cationic polymer being required to be in a complex coacervate phase in the shampoo composition or forms a complex coacervate upon dilution of the shampoo composition with water. Further, as Guskey

does not disclose or recognize the relationship that the amount of this coacervate actually increases as the charge density of the cationic polymer decreases, and further wherein there is no disclosure in Guskey that the lower charge density cationic polymer will yield higher levels of coacervate and therefore higher wet conditioning, there is no motivation to select the present invention's lower charge density cationic polymers wherein the cationic polymer is in a complex coacervate phase in the shampoo composition or forms a complex coacervate upon dilution of the shampoo composition with water, as required by the present invention.

Clearly, Guskey neither discloses nor makes obvious this component of the present invention.

Rejection Under 35 USC 103(a) Over Guskey (U.S. Patent 5,977,036)

Claim-27 has been rejected under 35 USC 103(a) as being unpatentable over U.S. Patent 5,977,036 (Guskey). Applicants respectfully traverse this rejection for two reasons. First, Guskey does not establish a *prima facie* case of obviousness because it does not teach or suggest all of Applicants' claim limitations. Second, even if a *prima facie* case was established, the obviousness argument is overcome by Applicants' showing of unexpected results. Therefore, Applicants' content that the claimed invention is unobvious and that the rejection should be withdrawn.

Guskey does not teach or suggest all of Applicants' claim limitations and therefore, does not establish a *prima facie* case of obviousness (see MPEP 2143.03). Specifically, Guskey does not teach the present invention's requirement that the cationic polymer is in a complex coacervate phase in the shampoo composition or forms a complex coacervate upon dilution of the shampoo composition with water, in combination with a lower charge density cationic polymer. .

Even if a *prima facie* case has been established, Applicants have overcome the presumption of obviousness by a showing of unexpected results.

Applicants have demonstrated unexpected results regarding that the lower charge density cationic polymer will yield higher levels of coacervate and therefore higher wet conditioning. Specifically, Applicants have shown has surprisingly found that the wet conditioning benefits are a result of the formation of a complex coacervate either in the full formula or during the wash or rinse step during shampoo use. This wet coacervate deposits on hair and delivers the wet conditioning benefit. Although the coacervate formation is caused by charge attraction of the anionic micelles and cationic polymers, it has surprisingly been found that the amount of this coacervate actually increases as the charge density of the cationic polymer decreases. Thus, the

lower charge density cationic polymer will yield higher levels of coacervate and therefore higher wet conditioning.

The present invention has also surprisingly discovered that the cationic polymers that form larger amounts of coacervate also form coacervates that contain lower levels of non-volatiles. Such coacervates with less non-volatiles provide the benefit of leaving the hair with a cleaner feel after drying and result in less weigh down to the hair. Therefore, not only do the low charge density cationic polymers provide the benefit of improved wet conditioning, but they provide this benefit without leaving as much residue on the hair as would be expected if higher levels of less efficient polymers were used.

Consequently, the present invention has now found that improved overall conditioning can be found by combining anionic surfactant in a shampoo with a soluble cationic organic polymer hair conditioning agent of low charge density and high molecular weight. These compositions can provide improved conditioning while reducing the level of undesirable side effects that can result from excessive deposition of conditioning agent in prior known conditioning systems. As discussed previously, a conditioning agent system with high charge density cationic polymers can result in build up on the hair over repeated usages and to loss of fullness of the hair. Too much cationic conditioning agent results in a coated, dirty feel of the hair. Now it has been found that the components of the present invention can provide improved overall conditioning while minimizing the adverse effects of conditioning agent build-up that otherwise can be incurred upon increasing the levels of individual components in prior known conditioning systems.

Therefore, Guskey does not disclose nor make obvious the present invention. Guskey is silent with regard to coacervate formation and does not provide any disclosure with regard to a cationic polymer being required to be in a complex coacervate phase in the shampoo composition or forms a complex coacervate upon dilution of the shampoo composition with water. Further, as Guskey does not disclose or recognize the relationship that the amount of this coacervate actually increases as the charge density of the cationic polymer decreases, and further wherein there is no disclosure in Guskey that the lower charge density cationic polymer will yield higher levels of coacervate and therefore higher wet conditioning, there is no motivation to select the present invention's lower charge density cationic polymers wherein the cationic polymer is in a complex coacervate phase in the shampoo composition or forms a complex coacervate upon dilution of the shampoo composition with water, as required by the present invention.

Therefore, Guskey neither discloses nor makes obvious the present invention, as now amended.

Conclusion

In light of the above remarks, it is requested that the Examiner reconsider and withdraw the rejection under 112, second paragraph, 102(e) and 103(a). Early and favorable action in the case is respectfully requested.

Applicants have made an earnest effort to place their application in proper form and to distinguish the invention as now claimed from the applied reference. In view of the foregoing, Applicants respectfully request reconsideration of this application, entry of the amendments presented herein, and allowance of Claims 1-12, 14-16, and 18-27.

Respectfully submitted,
Douglas Allan Royce, et al.

By Linda M Sivik
Linda M. Sivik
Agent for Applicant(s)
Registration No. 44,982
(513) 626-4122

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Amerchol
THE ELEGANCE ENGINEERS

Products Functional Overview

Functionalities of Amerchol Conditioning Polymers at a Glance

P = Primary Functionality
S = Secondary Functionality

Amerchol Product/ INCI Name	Chelating Surfactants	Conditioners	Deposition Agents	Emollients	Emulsifying Agents	Emulsion Stabilizers	Film Formers	Foam Enhancers	Fragrance Fixatives	Gelling Agents	Humectants	Moisturizers	Slip Agents	Solvency	Surfactants	Thickeners
UCARE™ Polymer JR 125 Polyquaternium-10		P	P				S					S				
UCARE Polymer JR 400 Polyquaternium-10		P	P				S					S				
UCARE Polymer JR 30M Polyquaternium-10		P	P				S					S				
UCARE Polymer LR 400 Polyquaternium-10		P	P				S					S				
UCARE Polymer LR 30M Polyquaternium-10		P	P				S					S				
UCARE Polymer LK Polyquaternium-10		P	P				S					S				

Site Navigation: | Amerchol: Products Functional Overview: Functionalities of Amerchol Conditioning Polymers at a Glance

Amerchol
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Products Functional Overview

UCARE™ Polymer JR 400

INCI Name: Polyquaternium-10

Selected Physical Properties

Dry product, 95% minimum through 20 mesh

2% solution viscosity: 300-500 cPs

1.5 – 2.2% nitrogen

Functional Contributions

- Cationic, water-soluble substantive conditioner for hair care and skin care products
- Nonirritating
- Compatible with a wide range of surfactants
- Exhibits non-Newtonian pseudoplastic properties
- Enables formulation of clear products
- Provides film formation and moisturization
- Controls the deposition of insoluble actives

Resources
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Site Navigation: | Amerchol: Products Functional Overview: UCARE™ Polymer JR 400

Amerchol
THE ELEGANCE ENGINEERS

Products Functional Overview

UCARE™ Polymer LR 30M

INCI Name: Polyquaternium-10

Selected Physical Properties

Dry product, 95% minimum through 20 mesh

1% solution viscosity: 1,250 – 2,250 cPs

0.8 – 1.1% nitrogen

Functional Contributions

- Cationic, water-soluble substantive conditioner for hair care and skin care products
- Nonirritating
- Compatible with a wide range of surfactants
- Exhibits non-Newtonian pseudoplastic properties
- Enables formulation of clear products
- Provides film formation and moisturization
- Controls the deposition of insoluble actives

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Site Navigation: | Amerchol: Products Functional Overview: UCARE™ Polymer LR 30M

Amerchol
THE ELEGANCE ENGINEERS

Products Functional Overview

UCARE™ Polymer JR 30M

INCI Name: Polyquaternium-10

Selected Physical Properties

1% solution viscosity: 1,000-2,500 cPs

1.5 – 2.2% nitrogen

Functional Contributions

- Cationic, water-soluble substantive conditioner for hair care and skin care products
- Nonirritating
- Compatible with a wide range of surfactants
- Exhibits non-Newtonian pseudoplastic properties
- Enables formulation of clear products
- Provides film formation and moisturization
- Controls the deposition of insoluble actives

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